

BIM execution plan خطة تنفيذ البيم

عمر سليم



وثيقة يتم كتابتها لإدارة البيم خلال المشروع و تحدد مخرجات المشروع و نحدد فيها

- الأهداف التي نرغب الوصول اليها
- المعايير standard التي سيعمل الفريق كله بها
- Software Platform البرامج التي سنعمل بها
- Stakeholders معرفة من المسؤول و من المالك و من المؤثرين أو المتأثرون في المشروع و كيف سنتعامل معهم
- Meetings: الاجتماعات متى ستكون و كيف
- Project Deliverable تسليم المشروع , كيف سيكون هل المطلوب model او shop drawing ......
- • Project Characteristics عدد المباني و حجمها و سماحتها و مكانها
- Shared Coordinates تحديد النقطة المشتركة بين الاقسام المختلفة
- Data Segregation تحديد الصلاحيات للوصول للبيانات
- Checking/Validation تحديد طريقة فحص المشروع و متى
- Data Exchange تحديد كيفية تبادل البيانات



و هذا طبعا يخضع للاتفاقات أثناء العقد و الممارسات البيئية التي تهتم بالحفاظ على البيئه و الشروط الحكومية

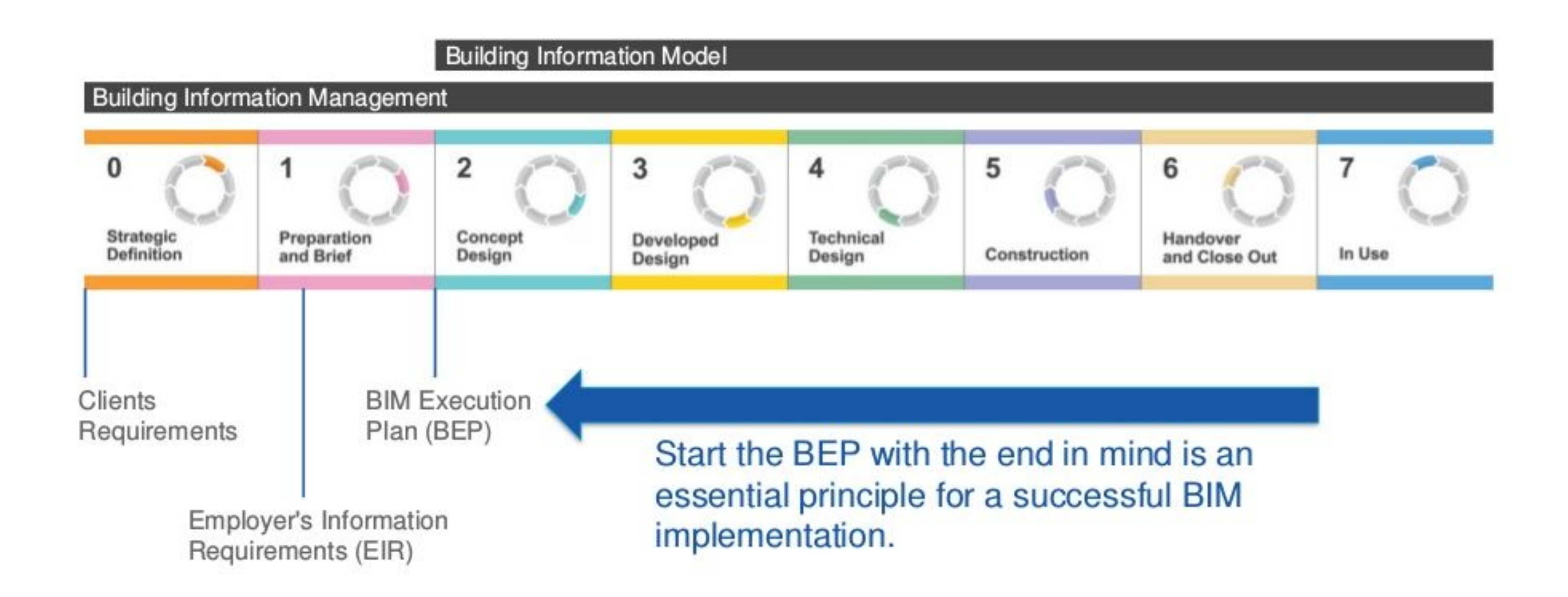
و يتم تحديد المطلوب وتحديد قدرات الفريق و تقسيم المطلوب الي مراحل و التاكد من أن الجميع يعملون نحو تحقيق الهدف

و يتم كتابته مرتين

الاولى : قبل امضاء العقد و يحتوي على الخطوط العامة

الثانية :بعد امضاء العقد و يكون اكثر تفصيلا

BEP Implementation



Key BIM Documents

Employer's Information Requirements (EIR)

Technical
- Information format and file types
- Levels of Definition at each stage
- Software platforms to be used for exchanging information

Management
- High-level roles and responsibilities
- Standards
- Data security

Commercial
- Client's strategic purpose
- Defined deliverables

BIM Terminology:
www.bre.co.uk/bim-terminology.jsp



Employer's Information Requirements (EIR)



BIM Execution Plan (BEP) Post-Contract



BIM Protocol



BIM Project Execution Planning Procedure

Identify BIM Goals and Uses	Define project and team value through the identification of BIM Goals and Uses.
Design BIM Project Execution Process	Develop a process which includes tasks supported by BIM along with information exchanges.
Develop Information Exchanges	Develop the information content, level of detail and responsible party for each exchange.
Define Supporting Infrastructure for BIM Implementation	Define the project infrastructure required to support the developed BIM process.

Delivery Strategy / Contract
Communication Procedures
Technology Infrastructure Needs
Model Quality Control Procedure

BIM
PROJECT EXECUTION PLAN

Figure i-1: The BIM Project Execution Planning Procedure

BIM Execution Plan (BEP) - Content

Management

- BEP Introduction
- Project Information
- Project Teams - Roles
- BIM Project Standards
- BIM Objectives / Goals
- Model Uses
- BIM Deliverables
- Coordination Meetings
- Project Milestones
- Survey Strategy
- Existing Legacy Data

Planning & Documentation

- Collaboration Strategy
- CDE Information
- Modelling Scope
- Model Check / Validation
- Clash Detection Process
- TIDP
- MIDP
- Responsibility Matrix

Standard Method & Procedure

- Volume Strategy
- Project Coordinates
- Levels, Grids and Phases
- Naming Standards
- Best Practices

IT Solutions

- Software Versions
- Exchange Formats
- Software Interoperability



اهم النقاط

التعريف بالمشروع

Project Information.1

Project Name	اسم المشروع
Project Address	عنوان المشروع
Project No. (Client Project N. or Reference No.)	رقم المشروع
Contract Form	BIM Manager (XXX
Project Description (EIR)	متطلبات العميل
Project Brief and CDM requirements	التعريف بمستوى البيم الذي نرغب به , و درجة التفاصيل LOD

General project information

Project Owner	Helse Norge
Project number	101122
Project name	Children's department of the Ulleval University Hospital
Project location	Kirkeveien 166, 0450 Oslo, Norway
Project description	A new children's ward will be built on the campus of Ulleval University Hospital. The total size of the new building will be 22,000 m2. The newly built construction will be connected to the existing cardiology department of the hospital, which will be fully functional during construction works. The demolition of some existing buildings and improvements to the surrounding infrastructure are included in the scope of the project.
Estimated project duration	January 2019 – December 2021

المراجع التي سنعمل عليها

ضروري وجود مراجع للعوده اليها مثل

- AEC (UK) BIM Technology Protocol v2.1
- AEC (UK) BIM Protocol – BIM Execution Plan v2.0
- AEC (UK) BIM Protocol for Autodesk Revit v2.0
- AEC (UK) CAD Standard for Layer Naming v4.0.2
- BS 1192:2007
- PAS1192-2:2012
- BIM Overlay to the RIBA Outline Plan of Work May 2012
- Dublin Institute of Technology (School of Surveying and Construction Management)
- BIM Forum
- CIC
- CPIx



المؤثرين على سير المشروع Key BIM stakeholders : اسمائهم و وسائل الاتصال بهم

Function	Company Name	Named Individual	Role
Client	Big Time Developments	John Walls	Client
Client Rep	Pentagon BIM Consultant	David Solutions	BIM Leader
Designer	ROH Architects LLP	Bill Murray	Design Leader / Principal Designer
Designer	ROH Architects LLP	Sarah Smith	BIM Design Leader
Designer	ROH Architects LLP	John Cane	Information Manager
Contractor	Build Alot Ltd	Phil Brick	Principal Contractor



“Strategy without process is little more than a wish list.” ROBERT FILEK

The BEP will define the BIM project strategy that will drive the BIM implementation success.

BEP Strategy:

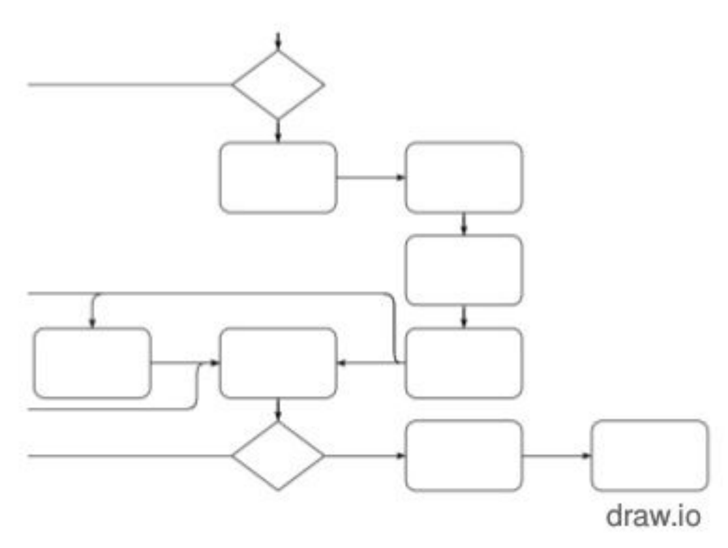
- Create the BEP in collaboration with the key team players to facilitate the adoption.
- Create a concise BEP with useful information.
  - The BEP will save time by improving model accuracy and avoid rework.
  - Reduce risk by defining roles and responsibilities.
- Improve project quality and help the team to keep on track.
- Meet the client expectation.
  - If you don’t have the clients EIR, create the BEP to define what the client is receiving.
- Define the technology strategy for the project. BEP - Project BIM Strategy

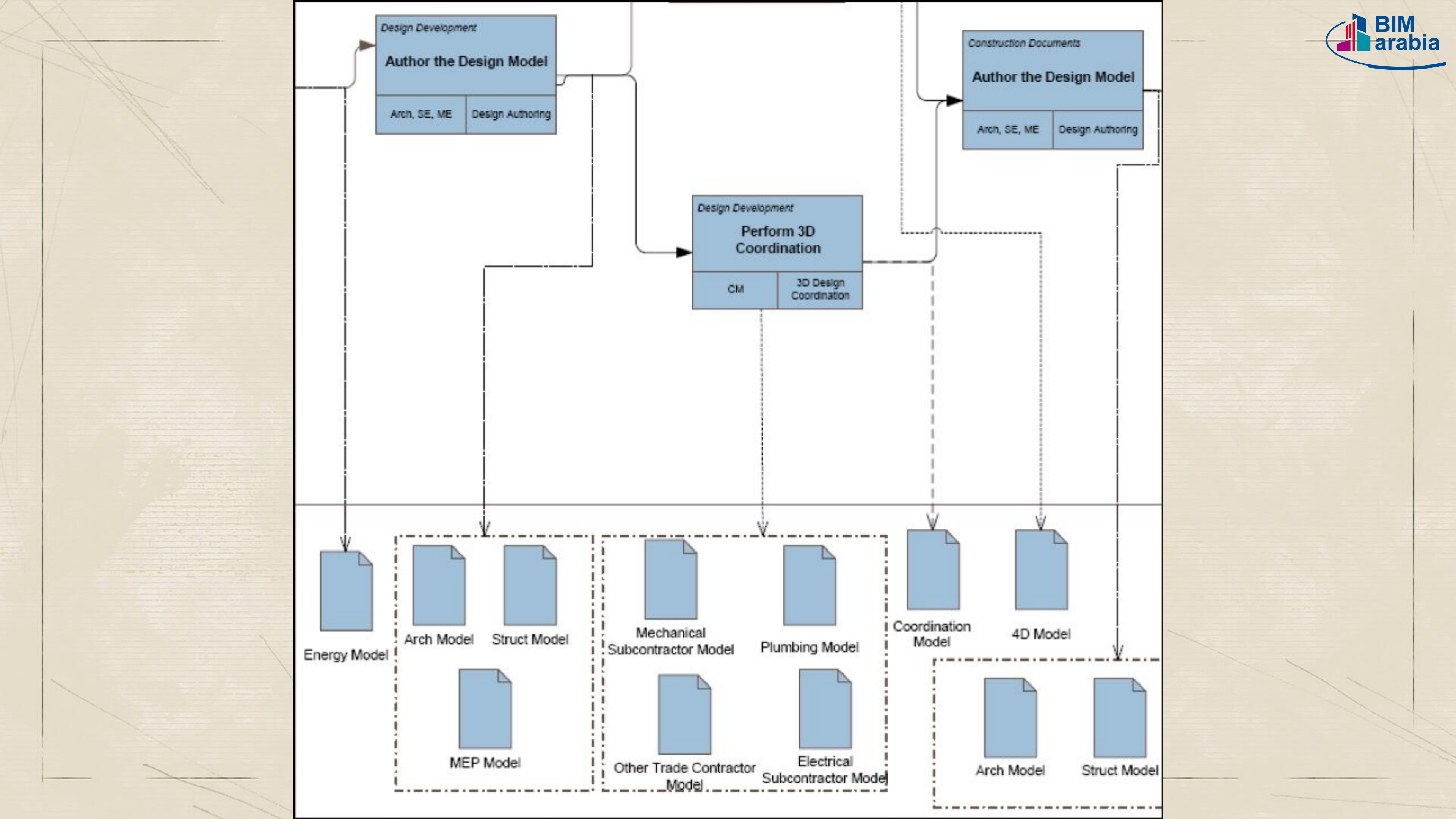
Building Information Management - Process

The processes for critical BIM Use should be created to improve the implementation and increase adoption.

Process:

- The BIM Uses must be assigned to project phases.
- Team responsibility.
- Information exchange requirements in the Common Data Environment (CDE).
- Specific software application workflow.




Design Development
Author the Design Model
Arch, SE, ME
Design Authoring
Design Development
Perform 3D Coordination
CM
3D Design Coordination
Construction Documents
Author the Design Model
Arch, SE, ME
Design Authoring
Energy Model
Arch Model
Struct Model
MEP Model
Mechanical Subcontractor Model
Plumbing Model
Other Trade Contractor Model
Electrical Subcontractor Model
Coordination Model
4D Model
Arch Model
Struct Model
BIM arabia

BIM Execution Plan (BEP)

Management

Project Teams - Roles

Role	Company Name	Initials	Name	Email	Phone
Employer's Representative					
Information Manager					
Lead Designer					
Project Manager					
Task Team Manager					
Task Information Manager					
Interface Manager					
ARC BIM Coordinator					
STR BIM Coordinator					
MEP BIM Coordinator					
Cost Consultant					
Asset Manager					

فريق العمل و التسمية الوظيفية و المهارات المطلوبة في كل فرد

Company name	Representative and Authorised Responsible Agent	Role
A	xxxxx	BIM Manager
B	xxxxx	Lead designer
C	xxxx	Project Manager
D	xxxx	Information Manager
E	xxxx	Task Team Manager
F	xxxxx	Task Team Manager

BIM Project Team Contacts

Responsibility	Company	Name	Email	Phone
General Contractor	Skanska	Jon Helse	jonhelse@skanska.no	+47 487 77 12
Design Architect	Snohetta	Marie Smith	maries@snohetta.no	+47 589 12 87
Design Architect	Snohetta	Jarle Doe	jarled@snohetta.no	+47 488 99 55
Structural Engineer	Norconult	Dag Steel	dag.steel@norconsult.no	+47 125 78 77
MEP Engineer	Cowi	Harald Heier	Herald.heier@cowi.no	+47 332 32 36
Plumbing	Norconult	Linn Vegg	Linn.vegg@ norconsult.no	+47 887 88 99
Electrical	Norconult	Tanya Stein	Tanya.stein@ norconsult.no	+47 214 56 88
Fire Protection	Sweco	Sara Soros	Sara.soros@sweco.no	+47 887 88 99
BIM Manager	Norconsult	Ignacy Lozinski	Ignacy.lozinski@norconsult .no	+47 589 74 12
Facilities Manager	Helse Norge FM	Tim Holte	timholte@helsenorge.com	+47 665 99 66



	Strategic						Management				Production	
Role	Corporate Objectives	Research	Process + Workflow	Standards	Implementation	Training	Execution Plan	Model Audit	Model Co-ordination	Content Creation	Modelling	Drawings Production
BIM Manager	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N
Coordinator	N	N	N	N	N	Y	Y	Y	Y	Y	Y	N
Modeller	N	N	N	N	N	N	N	N	N	Y	Y	Y

BIM Execution Plan (BEP)

Management

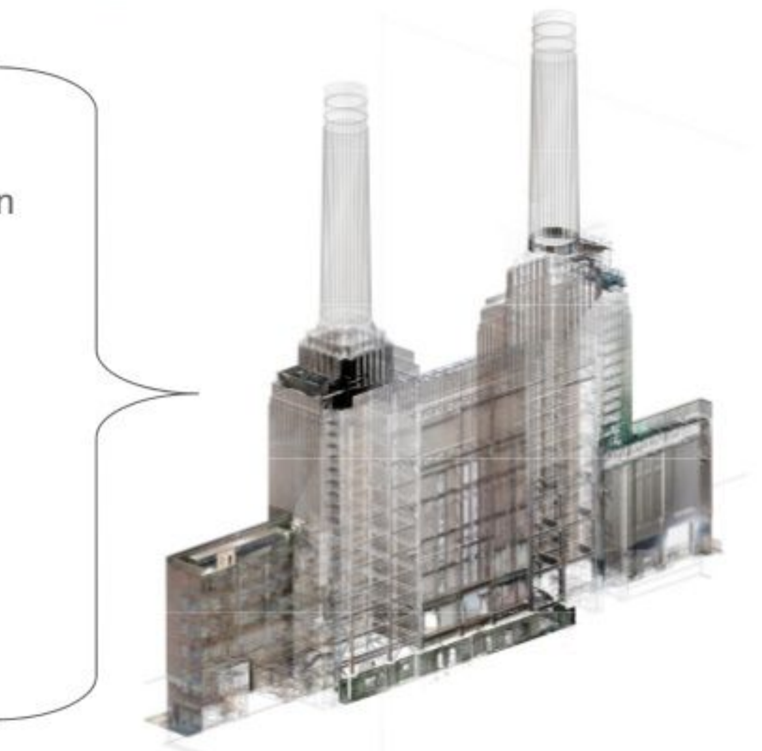
Model Uses

Y/N	Use	Comments	Stages
✓	3D Coordination	Used for for project coordination	Scheme Design Detailed Design and Production Information
✓	Clash Detection	Reporting of interferences	
✓	Design Review	Used for project validation	
✓	Cost Estimation	Used for accurate quantity take-offs	
✓	FFE Specifications	Data associated to specifications	
✓	Scheduling	Data Output E.g. Doors	

Building Information Management - Use

- 3D Coordination
- Design Review
- Clash Detection
- Visualization
- Construction Design
- Existing Condition
- Planning
- Phase Planning (4D)
- Record Modelling
- Site Planning
- Site Analysis
- Structural Analysis

- Energy Analysis
- Cost Estimation
- Sustainability LEED Evaluation
- Building System Analysis
- Space Management
- Mechanical Analysis
- Code Validation
- Lighting Analysis
- Other Eng. Analysis
- Digital Fabrications
- Asset Management
- Building Maintenance



Battersea Power Station, UK



المطلوب في المشروع

BIM USE	Yes or No
3D Coordination	Yes
As Built Records	Yes
Building Maintenance Schedule	Yes
Building System Analysis	Yes
Clash Detection	Yes
Code Validation	Yes
Yes Construction Sequencing	Yes
Cost Estimation	Yes
Design Review	Yes
Digital Fabrication	Yes
Disaster Planning	
Drawing Production	Yes

BIM arabia

اسماء البرامج المستخدمة و اصدارتها

Company	Database	CAD Software	Version	Format	Comments
Architects		Revit Architecture	2016	rvt.	For architectural Model
		Navisworks Manage	2016	,nfc. ,nwd. nwf.	Model federation and clash detection
Structural Consultants		Revit Structure	2016	rvt.	For Structural Model
		Navisworks Manage	2016	,nfc. ,nwd. nwf.	Model federation and clash detection
MEP Consultants		Revit Structure	2016	rvt.	For MEP Model
		Navisworks Manage	2016	,nfc. ,nwd. nwf.	Model federation and clash detection
BIM manager		Revit	2016	rvt.	For BIM Model
		Navisworks Manage	2016	,nfc. ,nwd. nwf.	Model federation and clash detection



OPERATE | CONSTRUCT | DESIGN | PLAN

Maintenance Scheduling
Building System Analysis
Asset Management
Space Mgmt/Tracking
Disaster Planning
Record Model
Site Utilization Planning
Construction System Design
Digital Fabrication
3D Control and Planning
3D Coordination
Design Authoring
Energy Analysis
Structural Analysis
Lighting Analysis
Mechanical Analysis
Other Eng. Analysis
LEED Evaluation
Code Validation
Design Reviews
Programming
Site Analysis
Phase Planning
Cost Estimation
Existing Conditions Modeling

Primary BIM Uses
Secondary BIM Uses

Figure 2-3: BIM Uses throughout a Building Lifecycle
(organized in reverse chronological order from project implementation)



نوعية الملفات التي ستسلم :

	DWG	DGN	DWF	PDF	IFC	Other
Models					*	RVT. NWD.. NWF.RVT. NWD. NWF
Drawings	*	. *	. *	.		
Final drawing format				*	.	
Schedules or spreadsheets						xlsx, COBie.

BIM Execution Plan (BEP)

Management

BIM Deliverables

Y/N	BIM Deliverable	Format	Stage	Discipline	Comments
✓	Design Model	RVT	2 to 5	ARC / STR / MEP	Models to be shared on the CDE
✓	2D Drawings	PDF	2 to 5	ARC / STR / MEP	
✓	Cost Estimation				
✓	Construction sequencing (4D)				
✓	Facilities Management (FM)				
✓	COBie				

BIM Execution Plan (BEP)

Planning & Documentation

TIDP - Task Information Delivery Plan – Created individually by each company

FILE INFORMATION			FILE NAME							DELIVERY DATES	
DELIVERABLE TYPE	FORMAT	DESCRIPTION	PROJECT	ORIGINATOR	VOLUME	LOCATION	TYPE	ROLE	NUMBER	MILESTONE 1	MILESTONE 2
MODELS											
DRAWINGS											
SPECIFICATIONS											
REPORTS											
OTHER											



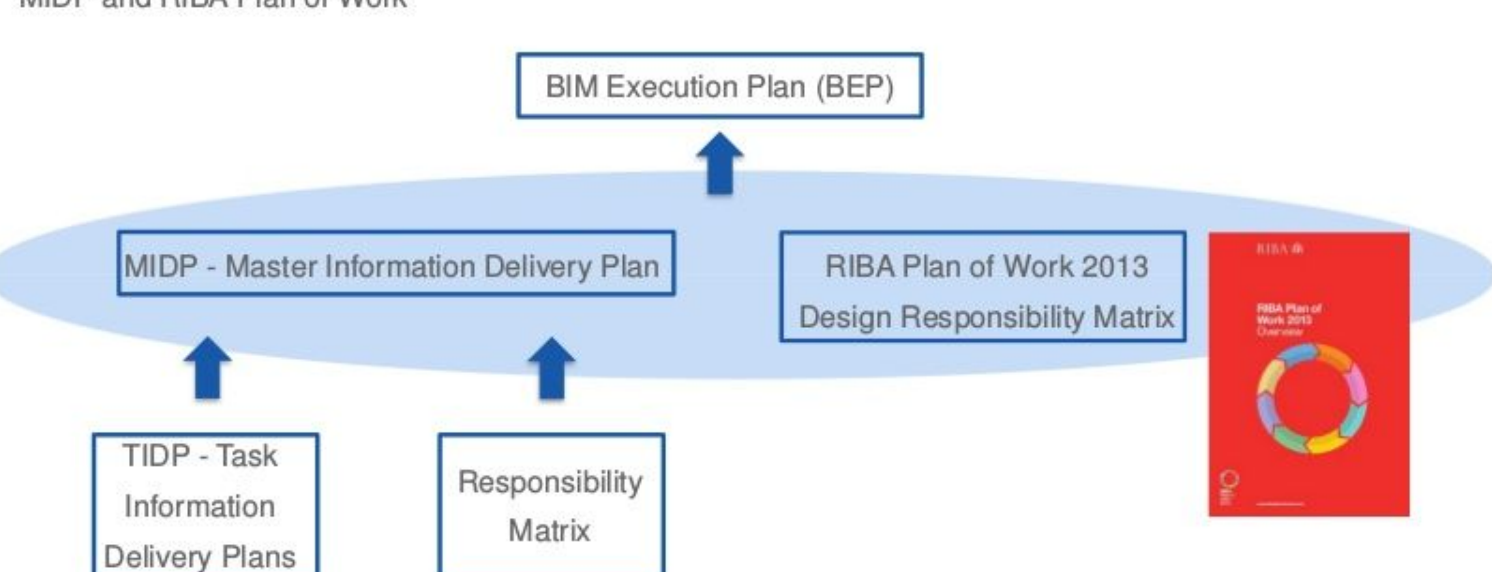
MIDP - Master Information Delivery Plan - Combined information by the project delivery manager

FILE INFORMATION			FILE NAME							PROGRAMME STAGE	
DELIVERABLE TYPE	FORMAT	DESCRIPTION	PROJECT	ORIGINATOR	VOLUME	LOCATION	TYPE	ROLE	NUMBER	ORIGINATOR	ISSUE DATE
MODELS											
DRAWINGS											
SPECIFICATIONS											
REPORTS											
OTHER											

BIM Execution Plan (BEP)

Planning & Documentation

MIDP and RIBA Plan of Work





مواعيد التسليم

Start Date	Design Completion	Detailed Design Completion & Fabrication	Construction	Asconstructed Models, Documents & Data	Handover
April 2012	*	.			
February 2014		*	.		
July 2014			*	.	
September 2016				*	.
December 2016					*

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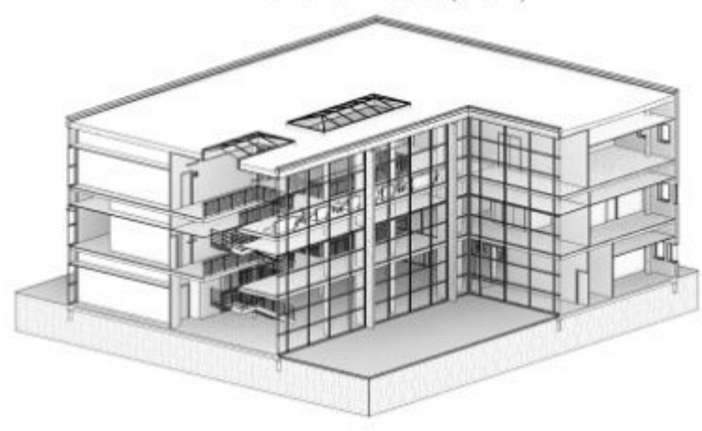
BIM Execution Plan (BEP)

Planning & Documentation

Level of Definition

Graphical Information

Level of Detail (LOD)



Non-Graphical Information

Level of Information (LOI)



Reference :

https://drive.google.com/file/d/1LC2fY47UcBLn2BCcylICLi8yj-GkC8jq/view?usp=sharing

https://docs.google.com/document/d/1dC-OVtarDl6Sd5JYX91dKl8xLJXMAZDymkmKrMC-EjM/edit?usp=sharing

https://drive.google.com/file/d/0Bw2zbRO83Gg4RVc5VUthbXduN1k/view?usp=sharing

https://drive.google.com/file/d/0B-NxSgLL8AgiVDJCUzJ5OFhKODQ/view?usp=sharing

http://web.mit.edu/facilities/maps/MIT_BIM_execution_plan.pdf

https://docs.google.com/viewer?a=v&pid=sites&srcid=ZGVmYXVsdGRvbWFpbnxkdDc3NWdyb3VwNHxneDozZDQ4MGI2ZmE4NjkxNjYz

bim.psu.edu

BIM

.operate.construct.design.plan

PROJECT EXECUTION PLANNING GUIDE

VERSION 2.1

RELEASED - MAY 2011

A buildingSMART alliance™ Project

Sponsored by
The Charles Pankow Foundation
The Construction Industry Institute
The Pennsylvania State University Office of Physical Plant
The Partnership for Achieving Construction Excellence

Developed by
The Computer Integrated Construction Research Program
at The Pennsylvania State University



